THE CHEMIST

MAY 1949 VOLUME XXVI No. 5

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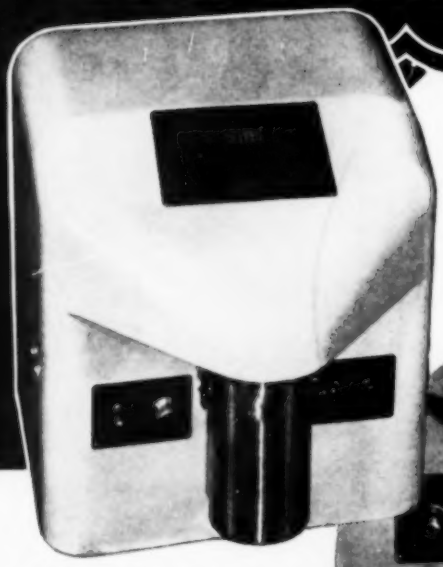

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SCHEDULED FOR FUTURE ISSUES

Manpower and Industry. By H. B. DeVinny.
How Can A Chemist Increase His Value? By C. P. Neidig, F.A.I.C.
Industry Looks to Education. By Dr. Frank M. Surface.
Best Foot Forward. By Luella Canterbury
Distribution of Chemicals and Chemical Specialties. By R.F. Revson, F.A.I.C.
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How Good an Employer Is Your Company? By Howard Nechamkin, M.A.I.C.
Vocational Guidance Conference—a Report
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COVER PICTURE

Dr. Vanderveer Voorhees, F.A.I.C., patent attorney, Standard Oil Company of Indiana, 910 South Michigan Avenue, Chicago, is the general chairman of the 1949 Annual Meeting, A.I.C. The Committees assisting Dr. Voorhees are Program: Dr. Herman S. Bloch, research chemist, Universal Oil Products Company; Arrangements, Bruce M. Bare, district manager, Sharples Chemicals, Inc.; Publicity, Dr. Gustav Egloff, Universal Oil Products Company; Entertainment, Clifford A. Hampel, Armour Research Foundation, and Finance, W. J. Podbielniak, president, Podbielniak, Inc.

The 1949 Annual Meeting Program, covering two full days of activity, appears on pages 156-157. The proceedings of the Annual Meeting will be carried in the June issue of THE CHEMIST.

New Directory

A new directory of members of The American Institute of Chemists is now being prepared. Each member's name will be listed, followed by the business position, name of firm, address of firm, and mailing address if it differs from the business address. A card asking for this information is being mailed to each member. Please fill it out and return it promptly.

PROGRAM
Annual Meeting 1949

THE AMERICAN INSTITUTE OF CHEMISTS

in cooperation with the University of Chicago and Illinois Institute of Technology

Edgewater Beach Hotel, Chicago, Illinois, May 6-7, 1949

FRIDAY, MAY 6

9:00 a.m. —Registration.

10:30-12:00 a.m.—Technical Session, Joint with Illinois Institute of Technology.

Chairman: Henry T. Heald, President, Illinois Institute of Technology.

"Jet Propulsion and Jet Fuels," John T. Rettalliata, Dean of Engineering, Illinois Institute of Technology.

"Problems of Mixing," John Henry Rushton, Director, Department of Engineering, Illinois Institute of Technology.

12:00 Noon —Luncheon meeting of A.I.C. National Council.

2:00- 5:30 p.m.—Technical Session, Joint with Institute for the Study of Metals, Institute for Nuclear Studies, and Institute of Radiobiology and Biophysics, University of Chicago.

Chairman: Thortin R. Hogness, Director, Institute of Radiobiology and Biophysics, University of Chicago.

"Nuclear Processes in the Atmosphere," John A. Simpson, Jr., Assistant Professor of Physics, Department of Physics and Institute for Nuclear Studies.

"Age Determination by Radio-carbon Content; World-Wide Assay of Natural Radio-carbon," Willard F. Libby, Professor of Chemistry, Institute for Nuclear Studies.

"The Measurement of Temperatures of Oceans of Past Geological Ages," Harold C. Urey, Distinguished Service Professor of Chemistry, Department of Chemistry and Institute for Nuclear Studies.

"Some Applications of Scintillating Crystals in the Field of X-rays and Radioactive Materials," Robert J. Moon, Assistant Professor of Physics, Institute of Radiobiology and Biophysics.

"Oxide Film Studies of Metals," T. N. Rhodin, Jr., Instructor, Institute for the Study of Metals.

7:30 p.m. —Annual A.I.C. business meeting.

SATURDAY, MAY 7

9:00 a.m. —Late Registration.

10:00-12:00 a.m.—Symposium, "What Can Be Done to Stimulate Basic Research?"

Chairman: Gustav Egloff, Universal Oil Products Company.

"Government Financed Basic Research," C. C. Furnas, Director, Cornell Aeronautical Laboratories.

"The Role of Universities and Industry-Financed Research," Ovid W. Eshbach, Dean, The Technological Institute, Northwestern University.

12:15 Noon —Luncheon, Massachusetts Institute of Technology Chemists.

2:00- 5:30 p.m.—Symposium, "The Chemist Looks at His Future."

Chairman, Elmore H. Northey, Administrative Director, Stamford Research Laboratory, American Cyanamid Company.

"The Chemist's Economic Status," Louis Koenig, Chairman, Chemistry and Chemical Engineering, Armour Research Foundation.

"The Chemist His Own Employer," Otto Eisenschiml, Scientific Oil Compounding Company.

"Advantages of the Industrial Laboratory," Edward L. Gordy, Standard Oil Company (Indiana).

"Extension of Chemistry into Non-Chemical Industries," Earl P. Stevenson, President, and Raymond Stevens, Vice-President, Arthur D. Little & Company.

"Governmental Impingements Upon Industrial Research," John W. Anderson, President, National Patent Council.

6:00 p.m. —Reception for Professor Warren K. Lewis, Medalist.

7:00 p.m. —Medal Award Dinner.

"Introductory Remarks," Lawrence H. Flett, President, The American Institute of Chemists.

"The Medalist," Robert B. Semple, Director of Development, Monsanto Chemical Company.

"The Professional Achievements of Warren K. Lewis," Thomas K. Sherwood, Dean of Engineering, Massachusetts Institute of Technology.

Medal Address, "The Professional Responsibilities of the Technical Man," Warren K. Lewis, Emeritus Professor of Chemical Engineering, Massachusetts Institute of Technology.

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National Committee On Sugar Analysis

The United States National Committee of the International Commission for Uniform Methods of Sugar Analysis will hold its annual meeting in the Engineering Societies Building, 29 West 39th Street, New York, N. Y. on May 16th and 17th. This will be the first meeting of the recently organized Committee at which scientific reports will be presented. Dr. F. W. Zerban, F.A.I.C., chairman of the Committee, announces that representatives of the member organizations will elect four delegates and four alternates to the Tenth Session of the International Commission to be held in Brussels, Belgium, August 15th to 20th. Further information may be obtained from Carl F. Snyder, Secretary of the Committee, National Bureau of Standards, Washington, D. C.

Bennett Elected President

H. Bennett, F.A.I.C., president of the Glyco Products Co., 26 Court Street, Brooklyn, N. Y., has been elected president of the New York University Chemistry Alumni Club. Graduates in chemistry and chemical engineering from this college are asked to send him their names and addresses and professional qualifications, to be included in a directory now being prepared.

Patents—The Foundation of Industry

Dr. Lloyd Van Doren, F.A.I.C.

Secretary, A.I.C.

(One of a series of editorials being prepared by members of the Council of THE AMERICAN INSTITUTE OF CHEMISTS)

IT WAS realized by those who drafted our Constitution that a great incentive to individual initiative would result if protection were given for a period of years in return for a full disclosure of the results flowing from various endeavors. Hence, the Constitution provides (Article 1, Section 8): "The Congress shall have the power . . . to promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries."

A patent grant is for a period of seventeen years. Several investigations during the past decade and a half have emphasized the importance of patent protection and advocated its continuance at the present, or even on a higher, level. That the patent system is the backbone of our industry cannot be gainsaid. It follows indubitably that the greater the strength of our patent grants, the stronger will be the foundation upon which industry rests. Therefore, the obtention of strong patents is of paramount significance.

Mr. H. E. Blood, president, Norge Division, Borg-Warner Corporation, and chairman of the Patents and Research Committee of the National Association of Manufacturers, recently made the following significant statement:

> "It is little realized that the American patent system has been one of the most important factors in developing our high standard of living and our American way of life. More widespread public interest in our patent system is important. Ill-advised tampering with it would adversely affect our standard of living and the lives of every American citizen."

In order to build strength into a patent structure, not only should the patent attorney be familiar with the field of invention, but the inventor should have at least some fundamental knowledge of patent procedure. This may be accomplished by acquainting inventors, and potential inventors, with the principal features which attend the preparation of a patent application, and the prosecution thereof before the Patent Office. It is believed

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such an end can be attained through seminars when the inventor is associated with industry and by courses in chemical patent procedure for students in colleges and universities. The seminars and courses may readily be arranged in collaboration with those engaged in the preparation and prosecution of applications relating to chemical inventions.

Thereby, the inventor and the attorney will approach any given situation on a more common ground and speak a common language, with mutuality of significant benefits flowing therefrom.

Gordon Research Conferences

The Gordon Research Conferences for 1949 will be held at Colby Junior College, New London, New Hampshire, from June 20th to September 2nd. The Advisory Board is being enlarged to include fifteen representatives of universities. Those elected this year are: Dr. Paul Bartlett, Harvard University; Dr. John Bowman, F.A.I.C., Mellon Institute of Industrial Research; Dr. C. A. Elvehjem, University of Wisconsin; Dr. Paul Flory, Cornell University; and Dr. H. S. Taylor, Princeton University. The Management Committee consists of Dr. Emil Ott, F.A.I.C., chairman, Hercules Powder Company; K. G. Compton, vice chairman, Bell Telephone Laboratories; Dr. Dean Burk, National Institute of Health; Dr. George Calingaert, Ethyl Corporation; S. S. Kurtz, Jr., Sun Oil Company; Dr. Randolph T. Major, F.A.I.C. Merck & Company. Dr. W. George Parks, F.A.I.C., Rhode Island State College, is director of the Committee. A small fund is available to academic individuals to assist them to participate in the conferences.

Summer Employment

B. T. Sumner, director of placement, Rutgers University, Newark Colleges, Newark 2, N.J., announces that students for summer employment are available from June 5th to September.

The Qualities of the Good Research Man

Dr. Maurice J. Kelley, F.A.I.C.

Director, Industrial Development Laboratory, Nopco Chemical Company, Harrison, New Jersey

(Talk presented before the Student Chemical Society, Lehigh University, Bethlehem, Pa., March 17, 1949)

THE success of a research laboratory depends more on the technical ability of the research workers than on the technical ability of the research director himself. Since his own success is so dependent on his men, the research director should exercise great care in the selection of his men. The research director must know what to look for, what makes a good research man, how to recognize a good research man when he sees one.

The research director must know the factors of (1) training, and of (2) personal qualities, that are important in industrial research. He must realize that a good research man is rarer than a good engineer. The engineer deals with certainties and can get quick, tangible results. The research man deals with the unknown and undergoes long periods of uncertainty, and even of disappointment. He must realize that few research men fail because of technical incompetence, but that most fail because of shortcomings in their personality. He must realize that all good men continually strive for self-improvement—and that above all else he must look for the striver.

Training

Let us examine the various phases and aspects of training. The proper training for a man desirous of a career in industrial research is a subject whose importance grows apace with the rapidly increasing number of research personnel in the country. This training is properly considered to consist of his formal education in college and university and the training he has acquired in his past professional positions. In all this, broadness and flexibility are preferred to too much specialization.

Specialization is desirable only to the extent that it is consistent with the requirements of a broad, appreciative education. Specialization must not replace any part of the foundation. And it must be borne in mind that an education in any field is a failure, if it fails to develop a sound sense of values, an insight into human nature, and an ability to live harmoniously with and work effectively with one's fellows.

For a career in research—funda-

mental, exploratory and product as distinguished from development and technical service—the Ph.D. degree is the proper formal training. This would be true, if only for the reason that a great many companies require the Ph.D. initially or for advancement. The real reason is that the work required for a Ph.D. degree is specifically designed to train a man in how to do research work. For a career in development, technical service, most of the engineering posts, and some technical administration posts, a bachelor's degree is usually adequate.

The student of science must learn early that the retention of fundamentals and principles is more important than the temporary acquisition of a kaleidoscope of facts, more important than high marks in examinations, more important even than a diploma. He can not solve problems with a diploma. He must develop his memory to retain useful facts and methods in an orderly fashion and his reasoning to apply principles in planning experiments and interpreting results. He must cultivate a desire to learn that will last a lifetime. He must resolve to study vicariously, if need be, until he is forty lest he die intellectually at twenty-five. He must always be preparing himself for the big opportunity that will come in a year or two or even sooner. Post graduate courses are strongly recommended as an occasional tonic to keep sharp the learning processes.

While the idea is very romantic to start work in a company as a lab boy and rise to be vice-president in charge of research, there is much to be said for acquiring two or three years' experience in each of several companies engaged in different fields of industry. Besides the experience, the impressive record left with a large number of professional associates and supervisors will be of inestimable value to one's career. To simulate such a widened experience, some companies have a positive plan for rotation of personnel, including technical, in a variety of positions to keep their outlook broad.

Personal Qualities

Let us look at some of the qualities of character and personality which are important for a career in research. The personal qualities of a man are largely native, but are capable of improvement or decline according to his own efforts. Those qualities believed to be most important in research men, and many of them apply to success in any field, are:

(1) High ideals.
(2) Aggressiveness.
(3) Creative thinking.
(4) Accurate observation.
(5) Judgment.
(6) Inspiration.
(7) Leadership.
(8) Cooperation.
(9) Optimism.

THE QUALITIES OF THE GOOD RESEARCH MAN

(1) High Ideals. The research man must have a sound philosophy of life; he must want to accomplish good—to do all things well. Beyond that, he must know and appreciate the significance of what he does and its relation to life.

(2) Aggressiveness. This quality, largely native, is a combination of ambition, initiative, energy and perseverance. Aggressiveness is the will to attack a problem with resourcefulness, to learn and to complete the job—in a word, to succeed. The aggressive man may often overstep organizational lines and regular channels in his enthusiasm to get the job done, but the wise boss will overlook much in such a man. Some writers have classified all men into (1) those who get things done, and (2) those who spend the same amount of time trying to avoid doing what needs to be done.

(3) Creative Thinking. The research man must have a natural curiosity to learn new things, to seek new explanations, to do new things. He must have the ability to place facts in new frames of reference, to realize that "laws" are approximations and may have to be interpreted differently in the light of new information. Invention goes beyond ordinary predictions; it is often intuitive, often induced by a state of complete relaxation. We have all heard stories of great inventions being conceived on a golf course, over a cocktail, or even in church. Yet every invention is seen first in the imagination, or at least the mind must be in readiness to see the new. Too much specialization or too great an accumulation of facts tends to dull inventive propensities. The mind must not be an attic for keeping facts safe. The mind must be an active file for ready reference, kept up to date by discarding old "facts" when newer ones are found.

(4) Accurate Observation. This most important quality of a scientific man enables him to see truly every detail without prejudice. He is patient in getting all the data, organizing them and interpreting them correctly. He is tolerant of unexpected or undesired results. He carefully records observational data as it really is, and at once; for he realizes that if one delays one is most likely to write what he remembers, and one is most likely to remember what he wants to remember. He is neat in his work and in preparing his notebook records and reports, and accurate and articulate both in speech and writing. Physical or-

derliness is an outgrowth of an orderly mind.

(5) Judgment. Judgment is the sense of balance which controls enthusiasm and imagination and directs all efforts into useful channels. Judgment is the capacity to think under pressure, to analyze, to pick out essentials, to appreciate their significance, to make right decisions. Its careful exercise in all things inspires confidence. The research man is expected to have good judgment.

(6) Inspiration. Inspiration is the ability to be inspired by the good qualities of one's superiors. Inspiration brings out the best in a man—enables him even to do better than his best. Inspiration is likewise the ability to inspire others, and is a most important attribute in a research director.

(7) Leadership. This quality is not an absolute requirement for research work, but leadership is necessary even in a group leader. Leadership (1) inspires confidence in one's technical ability, aggressiveness, and good judgment; (2) guarantees fairness in all dealings with every subordinate and with his ideas; (3) corrects all with equal rigor, points out improvement, praises whenever possible; (4) cooperates with other leaders and superiors; (5) builds an ever enlarging record of success.

(8) Cooperation. Cooperation is working well with all groups. Cooperation subserves individual good to the good of the company as a whole. Cooperation is marred by one's thinking that he contributes all the good ideas and none of the bad ones, or by one's refraining to express his views prior to experiments for fear of being wrong. Nothing can be so fatal to a research director's career as poor cooperation.

(9) Optimism. Optimism is of more importance to research men than most others, in order to offset the natural tendency to discouragement in research. It has been estimated that as high as ninety per cent of research results are disappointing. Optimism is the frame of mind which expects success—which expects positive results, even if different from those anticipated. Optimism predisposes one to recognize results easily. When optimism is gone, either change the project or the man working on it. Optimism is said to be naturally greater in young men, and to have a possible bearing on their greater inventiveness. Others say youth is a state of mind—a vigor of imagination and hope.

In conclusion, let us remember that individual excellence must be the

lively goal, daily striven for, of every research man who would achieve true success. Otherwise, he is likely to work out a life sentence in just a job.

Calco Consolidates Research, Development and Technical Service Departments

A consolidation of Research, Process Development, and Dyes Technical Service into a single department has been annonnced by S. C. Moody, vice president of Calco Chemical Division, American Cyanamid Company, Bound Brook, N. J.

The new department will be known as the Research and Development Department. K. H. Klipstein, F.A.I.C., assistant general manager, Calco Chemical Division, in charge of the department, stated that "the growing need for better integration and coordination between Research, Process Development and Technical Service as a result of the Company's expansion, necessitated the consolidation."

Dr. M. L. Crossley, F.A.I.C., under whose direction Calco's Research Department has developed into one of the nation's most important industrial research centers, is retiring in August, 1949. Dr. Crossley will act as special consultant to Mr. Moody, vice president and general manager, and to the heads of the Research and Development Department.

Dr. H. Z. Lecher, F.A.I.C., since 1938, associate director of research, has been named director of research of the Calco Chemical Division. Dr. Lecher, a native of Vienna, Austria, obtained the Ph.D. degree from the University of Munich, where he taught organic chemistry from 1920 to 1922. From 1922 to 1927 he was professor of chemistry at the University of Freiburg (Boden). Dr. Lecher went to the I. G. Farben Industries in 1927 to direct research on synthetic rubber in Leverkusen, where from 1928 to 1932, he was director of the main research laboratory. He came to this country in 1932 to direct research on dyes at Calco.

Dr. R. P. Parker, F.A.I.C., as assistant director of research, will be in charge of the Pharmaceutical Research Section. Dr. Parker received the Ph.D. degree from Yale and joined the Calco Organization in 1933 as a student trainee. He was appointed assistant to Dr. M. L. Crossley, F.A.I.C., research director, in 1946, and in 1947 was named assistant research director.

Dr. R. H. Kienle, F.A.I.C., known for his fundamental work in polymers and in alkyd resins, has been named director of application research. Dr. Kienle, a native of Easthampton, Mass., received the B.S. degree from Worcester Polytechnic Institute and the M.S. degree from Union College. After graduate work

at Massachusetts Institute of Technology and Rutgers University, he received the Ph.D. degree from Rutgers in 1938. Associated with the General Electric Company for fourteen years, he joined Calco fifteen years ago.

Specialists Offered Army Commissions

First Army Headquarters, Governors Island, New York, announces that direct appointments in the Regular Army as second or first lieutenants are being given to critically needed specialists in sixty-eight fields. Appointments will be made in the Chemical Corps, the Corps of Engineers, the Ordnance Department, the Quartermaster Corps and the Signal Corps.

In the Chemical Corps, specialists are needed in physics, nuclear physics, chemistry (organic or physical), chemical research engineering, chemical engineering, meteorology, bacteriology, mechanical engineering, biochemistry, and industrial engineering.

Applicants should be between 21 and 30 years old; possess a master's or doctor's degree from an accredited university, or a bachelor's degree with three years of practical experience. Those now attending colleges may submit their applications ten months prior to completion of their course. Request information from Headquarters First Army, Information Section, 90 Church Street, New York 7, N. Y.

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Spectroscopy Symposium

The Society for Applied Spectroscopy announces a full-day symposium, "Theory and Application of Spectroscopy," to be held May 21, 1949, at the Polytechnic Institute of Brooklyn, Brooklyn, New York.

The Legal and Professional Status of the Clinical Laboratory Scientist

A. J. Nydick, F.A.I.C.

Patent Lawyer, 270 Broadway, New York 7, N. Y. Chairman, A.I.C. Committee on The Chemist in Public Health. Member of New York Chapter, A.I.C. Member Advisory Committee.

(A paper delivered before the National Association of Clinical Laboratories, Newark, N. J., April 1, 1949.)

FOR many years, the scientist in the clinical laboratory has been compelled to exercise unrelenting vigilance against recurrent attacks on the right to practice his profession, and particularly in respect of his right to direct or supervise the operations of the clinical laboratory.

The motivating forces behind the attacks originate from a very small group of medical doctors who specialize in laboratory work. In general, indeed almost universally, the relationship between the clinical laboratory scientist who does not hold the M.D. degree and the clinician whom he serves so well is one of utmost cordiality. The relationship is one of respect and understanding. That cordiality also exists between the non-medical clinical laboratory scientist and many of the medical men who direct clinical laboratories. However, there is a small but vociferous group among the laboratory physicians that strives constantly to restrict the activities of the non-medical clinical laboratory scientists. It is the contention of that group that the work of the clinical laboratory is a medical specialty because it is so germane to the practice of medicine. Objectively-minded medical men, however, see that the basic reason for the restrictions which are sought by the vociferous group is fundamentally economic in character.

After the American Chemical Society published the brief it had submitted to the Attorney General of Pennsylvania in 1938, the *Journal* of the American Medical Association editorialized upon it, and said that the controversy between the clinical chemist and the clinical pathologist was:

> "principally a commercial problem ancillary to the practice of medicine."

That accurate appraisal of the matter was challenged by Dr. T. B. Magath in the *American Journal of Clinical Pathology* (July 1939). He

took the editorial writer in the JAMA to task, and said that the editorial:

> "apparently was written by a youthful member of the staff who could not, because of lack of experience, possibly have grasped the significance of the basic problem; it is not 'principally a commercial problem ancillary to the practice of medicine' and the method of attack by the American Chemical Society is not the important issue at stake."

The various attempts made to bar the clinical chemists, the clinical microbiologists and their confreres from practicing their professions are manifested either through administrative regulations promulgated by Departments of Health or laws enacted by state or municipal legislative bodies.

It is a fundamental proposition under our constitutional system that a person is entitled to engage in a lawful profession or vocation unless the public interest requires that he be regulated so as to assure the public of adequate protection against incompetence, quackery or charlatanism. That is a cardinal principle. It should always be borne in mind by all proponents of restrictive legislation that regulation is "indicated" only when the public interest requires such therapy. That proposition is beautifully stated by the Supreme Court of Illinois in the case of Scully vs. Hallihan, 365 Ill. 185, in which the opinion writer said:

> "It is one of the fundamentals of our democratic form of government that every citizen has the inalienable right to follow any legitimate trade, occupation, or business which he sees fit. His labor is his property, entitled to the full and equal protection of the law under the due process clause of the Federal Constitution. It is also embraced within the constitutional provision guaranteeing to everyone liberty and the pursuit of happiness. Allgeyer v. Louisiana, 165 U. S. 578, 17 S. Ct. 427, 41 L. Ed. 832. This right to pursue any trade or calling is subordinate to the right of the state to limit such freedom of action by statutory regulation where the public health safety, or welfare of society may require. Nebbia v. New York, 291 U. S. 502, 54 S. Ct. 505, 78 L. Ed.. 940, 89 A.L.P, 1469. However, in those instances where the police power is invoked to regulate and supervise a legitimate occupation the restraint imposed must be reasonable."

Now it is important to note the last few words of that quotation. Those words are: "the restraint imposed must be reasonable." We thus come to the consideration of a vital element; namely, the one of reasonableness. The Court in the case, from which I have just quoted then proceeded to furnish the yardstick by which one can ascertain the presence or absence of reasonableness. The determination is one based upon sound

judicial appraisal of what the public interest requires.

Thus the Court said:

> "The determination by the General Assembly that such regulations upon a trade are needful is not conclusive and is always subject to review. In order for such regulations to be lawfully imposed upon the constitutional rights of the citizen to pursue his trade or business, the act passed under the guise of a measure to protect the public health, comfort, or welfare must have a definite relation to the ends sought to be attained. Banhart v. Walsh, 339 Ill. 132, 171 N. E. 154."

It is obvious, therefore, that any restrictive legislation or regulation is always subject to judicial scrutiny in order to determine whether or not the restraint imposed is of such reasonable magnitude as is required to protect the public. If the restraint extends in scope beyond that which is necessary to afford the public the protection it requires, then the restraint is unreasonable and invalid.

Regulation Restricted

Although the agitation for enactment of regulations to control a profession, trade or occupation may come from those engaged therein these persons have no right to rid themselves of competition. In other words, those engaged in a profession, trade or occupation who seek restrictive regulations for themselves, cannot have regulations put on the books in order to give themselves a monopoly. A regulation is not justifiable when it becomes evident that the purpose of the proponents of restrictions was merely to erect an economic barrier against competition. A group seeking the regulation of their profession, trade or occupation has no right to demand that it be given a closed shop. Our American system is one of free enterprise and competition. The public interest which requires competence of those who solicit the patronage of the public also requires that there be competition amonfi those soliciting such patronage.

In the light of the foregoing requirements that regulations be reasonable, it becomes necessary to point out, once more, to those who clamor that the clinical laboratory director should hold the M.D. degree that (1) activities of the scientists in the clinical laboratory do not constitute the practice of medicine, and (2) accordingly that any legislation which requires that the director of the clinical laboratory shall possess an M.D. degree is violative of the fundamental principles under our system of government.

That brings us to the crucial question; what is a clinical laboratory. It is impossible for a person thoroughly to understand this problem unless it is made clear why the activities of the clinical laboratory scientists do not constitute the practice of medicine.

Modern medicine has reached its present state of development because

of the great advances that have been made in the fundamental sciences of chemistry, physics, bacteriology, etc.

The physician's comprehension of the functioning of the living human body is due in a large part to the investigations of the chemist, the biologist, the physiologist, the bacteriologist and their fellow scientists. The writings of the giants in the medical world are replete with acknowledgements of indebteness to the work done by the fundamental scientists. I chose at random the following statement from *A History of Pathology* by Dr. Esmond R. Long, Professor of Pathology at the Henry Phipps Institute at the University of Pennsylvania:

> "Organized chemical pathology . . . began with the great development of chemical laboratories in Germany in the second quarter of the nineteenth century, under the influence of Justus von Liebig (1803-1874), a pupil of the French chemical school of Gay-Lussac. From this fruitful period organic chemistry took its start. Moreover the barriers between this kind of cehmistry and the chemistry of the living body were broken down almost as soon as they were set up, by Friedrich Wohler's (1800-1882) laboratory conversion (1828) of the organic substance ammonium cyanate into urea, a typical animal substance, the chief end product of nitrogen metabolism in the human body. Other discoveries of the utmost physiological importance followed in rapid succession in the hands of Liebig, Wohler, and their associates and pupils.
>
> "The leading physiological chemist of recent times, and one of the greatest chemists of all time, was Emil Fisher (1852-1919), for a quarter of a century professor in Berlin, who advanced every field of biological chemistry by direct personal investigation, as well as through the training of a host of brilliant pupils. The carbohydrate and protein chemistry of today is largely Fischer chemistry. His elucidation of the structure of the proteins, his methods of protein analysis, and finally his resynthesis of the protein "building blocks" into molecularly huge, proteinlike compounds, have been spectacular, and may prove of far-reaching consequence, as it is the proteins, of all chemical compounds, which seem peculiarly characteristic of life and living processes (pp. 272 273)."

A clinical laboratory therefore, is:

A laboratory for the practical application of chemistry and other fundamental sciences wherein are made such factual investigations of materials of human origin for the physician as he may desire in the study of his patients.

Clinical Laboratory Procedures

It is impossible to conceive that anyone would question the fact that the methods used in a clinical laboratory are basically identical in principle with those that are used in the laboratories serving industry, commerce and fundamental research. The procedures used in the clinical laboratory are those employed by the scientist in carrying out the analysis

of materials of plant origin, animal origin, foods, feed stuffs, soils, fertilizers and the host of products and materials which are constantly undergoing investigation in the laboratories of the world.

The development of improved techniques and new concepts in clinical laboratory procedures require profound training and experience in chemistry, microbiology and the related sciences, the use of specialized apparatus and precision techniques in micro-methods. The initiators of methods and standardizers of procedures must possess a thorough knowledge of the chemical reactions involved in the preparation of reagents and an understanding of the effect of the reagents upon the substances isolated or distinguished by the manipulations in the laboratory.

Despite the fact that the small but vociferous group, which yearns to monopolize clinical laboratory practice, does acknowledge the mastery of chemistry by the chemist and of microbiology by the microbiologist, the group, nevertheless, insists that these scientists shall be subservient to them in the clinical laboratory. These gentlemen insist that it is they, and they alone, who should be allowed to sign the report; that it is they, and they alone, who should be allowed to discuss the scientific significance of a laboratory report with the physician who has requested the laboratory work. It is manifest that their insistence upon such subjugation of the scientist in the clinical laboratory is unreasonable and scientifically unsound. How could the scientist have acquired his knowledge of biochemical reactions or of microbiological phenomena, or of the identification of micro-organisms unless he was familiar with the materials that he works with.

The scientist in the laboratory is familiar with the fact that in conditions of normal health of an animal or the human, the composition of a particular body fluid or secretion is of a certain average. Those average or normal values are arrived at through familiar statistical methods upon the basis of innumerable analyses or other determinations. The normal value for a particular constituent in the blood, for instance, of the rat, the guinea pig, the hamster, the chick, the ovine and bovine has been arrived at through repeated investigations in the laboratories throughout the world. By like token, the normal range of sodium chloride or the other constituents of the blood has been determined in corresponding fashion. When materials of human origin are subjected to investigation in the laboratory and certain of the constituents thereof are found to be present in subnormal or abnormal amounts, the scientist who is familiar with these matters makes diligent inquiry to find out what were the conditions which attended those subnormal or

abnormal values. As a student of the living organism, be it the laboratory animal or the human, he understands and is able intelligently to talk about the conditions which give rise to abnormal or subnormal findings. When he discusses his laboratory findings, he speaks as a scientist and imparts to the physician the fruits of the knowledge he has acquired. The physician may glean that scientific information for himself by study of the literature or consultation with others. It is obvious, therefore, that the scientist in the laboratory can by no stretch of the imagination be considered as engaged in the practice of medicine.

Not the Practice of Medicine

And by the same token, a clinical laboratory does not practice medicine. No fiat can make the act of identifying a chemical compound or a microorganism the practice of medicine.

Despite these accepted and well-recognized principles, the scientists who operate or supervise clinical laboratories have been compelled constantly to guard themselves against the sniping of those who would reduce them to a state of second-class citizenry in the professional world. It is amazing that a small group of professional men, men of whom one would expect understanding, objectivity and due respect for professional competence of scientists should constantly demonstrate the sensitivity of their pocketbook nerves.

The clinical laboratory is not only a useful but absolutely necessary part of modern life. Without the laboratory a physician would be unable to fulfill the responsibility that he owes to his patient. In order that a laboratory may fulfill its function, it should be staffed by scientists, and scientific workers possessing the competence that will assure the physician of the service that he requires. The laboratory should not only be staffed by competent personnel, but it should likewise be provided with equipment and facilities adequate for rendering the competent service.

The clinical laboratory scientist recognizes these needs. He has no objection whatever to regulation that will assure the public of competence of the personnel of the laboratory and adequacy of the facilities thereof. He does object, however, to the passage of legislation or promulgation of regulations which unreasonably demand that he shall possess the M.D. degree in order to carry on the work for which he has trained. The scientists of the clinical laboratory have no objection whatever to regulations or laws which require that the chemical work shall be performed by those competent to do so, that the microbiological work shall be carried on by those competent to do so, that the report of the laboratory shall be signed by someone who is responsible for the work done in the laboratory; but he does vigorously object to any

requirement that he shall hold the M.D. degree.

In order that the scientist in the clinical laboratory may assure himself of the right freely to exercise his professional skill, to utilize his training and experience in his chosen field, to own the laboratory or to discuss its operations, the clinical laboratory scientist must unite with his confreres working in this field. Up to now, our scientific and professional societies have promptly come forward to champion those rights. Today it is important for the men in the clinical laboratory field to associate themselves more closely together than ever before, so as better to exercise vigilance against assaults on their freedom to practice their profession. They must provide the primary defense and spearhead the offense whenever their professional freedom is threatened. They should expect their fellow scientists in industry, commerce, agriculture and fundamental research to aid them, but they should not expect those fellow scientists to shoulder their bruden.

Federation Needed

It seems to me that what is needed is a federation or coordinating council composed of representatives of the various societies and associations who are vitally concerned with or interested in the professional independence and integrity of the clinical laboratory. You all know that the Federation of American Societies for Experimental Biology is composed of the several societies in the biological field; that it was formed in order to coordinate the activities of the several societies in the interest of fuller exchange of information and enlargement of personal acquaintanceship among the scientists in the various specialties.

By like token, in the clinical laboratory field, there should be established a national council for the coordination of clinical laboratory sciences. That council should be composed of representatives of the American Chemical Society, THE AMERICAN INSTITUTE OF CHEMISTS, the American Society of Biological Chemists, the American Society of Professional Biologists, the American Association of Clinical Chemists, the American Association of Pathologists and Bacteriologists, the National Association of Clinical Laboratories, the American Board of Medical Technologists, the American College of Medical Technology, representatives of the various medical associations, the American Physical Society, the Association of Atomic Scientists and all other professional or scientific societies or associations whose interests lie in the scientific aspects of the living body.

In conclusion, let me emphasize that the clinical laboratory scientist is as truly a professional person as is the lawyer, the physician or the minister. The Supreme Court of the Uni-

ted States declared that such was so many years ago.

The Court said:

"The question presented to us assumes that the individual is a chemist, and that he has come to this country for the purpose of pursuing his vocation as a chemist on a sugar plantation in Louisiana. It may be assumed that the branch of chemistry which he will practice will be that which relates to and is connected with the proper manufacture of sugar from the sugar cane, or possibly from sorghum or beets. He is none the less a chemist, and none the less occupied in the practice of his profession because he thus limits himself to that particular branch, which is to be applied in the course of scientific manufacture of sugar, any more than a lawyer would cease to practice his profession by limiting himself to any particular branch thereof or a doctor by confining his practice to some specialty which he particularly favored and was eminent in.

* * *

"Formerly, theology, law, and medicine were specifically known as 'the professions'; but as the applications of science and learning are extended to other departments of affairs, other vocations also receive the name. The word implies professed attainments in special knowledge, as distinguished from mere skill,—a practical dealing with affairs, as distinguished from mere study or investigation; and an application of such knowledge to uses for others, as a vocation, as distinguished from its pursuit for its own purposes. There are professors of chemistry in all of the chief colleges of the country. It is a science, the knowledge of which is to be acquired only after patient study and application. The chemist who places his knowledge acquired from a study of the science to the use of others, as he may be employed by them, and as a vocation for the purpose of his own maintenance, must certainly be regarded as one engaged in the practice of a profession which is generally recognized in this country."

(United States v. Laws, 163 U. S. 258).

As a professional person, the clinical laboratory scientist is subject only to such regulation as will assure the public that he is competent to perform the scientific services that he offers to the public. He does not have to possess the M.D. degree in order to supervise the investigations in biology, chemistry, physics or the specialized branches thereof which are within the province of the clinical laboratory.

P. J. Wood, F.A.I.C., technical director of Royce Chemical Company, Carlton Hill, N. J., delivered the lecture "The Medalist-The Scientist", on the occasion of the presentation of the Olney Medal to Harold M. Chase, director of research, Dan River Mills, at the Annual Convention of the American Association of Textile Chemists and Colorists held recently, in Augusta, Georgia.

Furthering Your Education

Howard Nechamkin, M.A.I.C.

Assistant Professor of Chemistry, Pratt Institute, Brooklyn, N.Y.

(This is the fourth of a series of papers prepared by members of, and reviewed before publication by, the Member Advisory Committee, New York Chapter, A.I.C.)

THE chemist or chemical engineer, as a member of a professional group, should be aware of the fact that his education does not end with the formal receipt of a degree. The economic and industrial systems of today are probably in a greater state of change and development than ever before in history. The professional man, to survive, must keep in step with this growth. He is forced to look upon the training he has received while completing his baccalaureate curriculum as consisting of the mere fundamentals of the huge field he has chosen to enter. When a graduate enters industry he will usually find some narrow phase of the greater subject matter of chemistry emphasized in his work. His subsequent "on the job" training will result either in his development as a specialist in his area, or more often, into a routine worker falling daily more deeply into the rut of stagnation.

Let a graduate who received the bachelor's degree, perhaps ten years ago, look through a current textbook in Freshman General Chemistry. No words or arguments in favor of continued further education could be more effective than the first-hand evidence of what seventeen and eighteen-year old college students are learning today. For the chemist to keep abreast of the times, he should subscribe to and read the technical journals, attend professional society meetings and study the latest textbooks in the field. The conscientious pursuit of such a program is a highly demanding and taxing—if not impossible, task. His other choice is to continue his studies in a graduate school so that he is exposed to this wealth of information, sorted and predigested by an instructor for his assimilation. It is not truly important whether or not he actually receives a higher degree, although by doing so he demonstrated effective mastery of his subject matter beyond the accepted normal; his prime objective should be advancement and broadening of his talents and scope of knowledge.

Similarly, he should not accept the idea that an advanced degree is an indisputable mark of superiority. Many students have continued their studies immediately upon receipt of the bachelor's degree, even as far as the doctorate, yet in industry and in

the world, they are failures because they have not succeeded in developing their imaginations, their cultural backgrounds, and their contact with industry and economics. These students are in an intellectual rut facetiously called "an ivory tower."

The problem facing the baccalaureate in chemistry is this: In order to continue my education

(a) Will I attend graduate school part-time or full time?
  (1) Will the loss of industrial contact be compensated for by my increased basic training?
  (2) Will I get more out of graduate school if I learn of some of the prevailing conditions in industry by taking a job, and studying part time?
  (3) Should I postpone graduate work until I have had time to amass industrial experience?
(b) Who will finance my education?
(c) Which school shall I attend?
(d) Will an advanced degree be one of my goals?

Consider some of the generalizations which follow while you attempt to answer these questions for yourself.

When you graduated from elementary school, you had no difficulty in being admitted to a high school. This is because education is generally compulsory to a certain age and there is an adequate number of high schools in existence. When you entered college, however, you must have observed that some of your school classmates were unable to secure admission into the college system. The reason for this is that the number of colleges is limited and the number of students which can be accommodated is also limited. The level at which graduate courses are given is decidedly higher than that for undergraduate courses. If you were not in the top third of your class in college, then the competition in graduate school may be too keen for you and it may be advisable for you to get some industrial experience before you try to enter graduate school. As a matter of fact, most of the better schools would probably not accept you for graduate work if you were not a better student.

On the other hand, if you have industrial experience, most graduate schools would be more likely to accept you. As a result of these industrial experiences you would probably be more interested and self-motivated in your studies since you will have seen chemistry in action. Certain fields such as research work and teaching have advanced degrees almost as a prerequisite. If you desire to enter such a field, make an advanced degree your goal. Do not be hasty, however, in deciding that you want to enter teaching or research, because too many people who choose these fields discover after years of

wasted effort that they were not meant for this type of work. It should be pointed out that even in these fields, industrial experience is indispensable because the widening effects of industrial contact will invariably make for a better teacher and research worker.

In selecting a school for graduate work, it is a good idea to attend a college other than the one in which you received your undergraduate education. All schools have strong and weak characteristics and if you get all of your education in one place your training may tend to be one-sided. The result of inbreeding is very often deterioration. If you make contacts with more schools you will also be making contact with more leaders and pioneers in the fields of chemistry and chemical engineering. If you intend to specialize in any phase of chemistry such as electrochemistry, high polymers, nuclear chemistry, etc., choose the school which is strong in that field. Quite frequently it is difficult to determine which school offers particularly good courses in the field of your choice. You can get a fairly good idea of which to attend by looking into the leading published books and journal articles and noting with which schools the authors are associated.

The problem of financing your education is such an individual one for each of us that only the most general statements can be made. First and foremost do not place the financial problem as the primary deciding factor in governing your choice. Many students, simply to avoid the inconvenience of moving away from home, be it that of parents or spouse, choose a local graduate school; often the very one at which their undergraduate degree was obtained. A decision of this type is short-sighted. A little financial sacrifice during the first few years of graduate study may be repaid many times over in later life. You may possibly finance your education by taking part-time jobs in the college town or even at the school itself. In many schools, fellowships and assistantships are available which will aid in financing your education. In any event be fair to yourself and investigate at least the possibility of financing your education in a school which is adapted to your needs.

Whether or not you do decide to attend graduate school and whether you finally receive an advanced degree and are successful in industry, home study should be continued. This is absolutely necessary for keeping you up-to-date. The first people to fail in their jobs are those who feel that they know enough. When you do your reading at home, vary your reading, subscribe to magazines and read books in fields other than your own. Develop yourself into a well-rounded and complete citizen and you cannot help being successful in the field of your choice.

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Lincoln T. Work, *At-Large*

April Meeting

The 256th meeting of the National Council was held April 13, 1949, at The Chemists' Club, New York, N. Y. Vice President Raymond E. Kirk presided. The following officers and councilors were present: M. L. Crossley, L. H. Flett, K. M. Herstein, F. A. Hessel, D. B. Keyes, R. E. Kirk, H. W. Mackinney, C.P. Neidig, E. H. Northey, D. Price, H. Robinette, Jr., F. D. Snell, L. Van Doren, J. R. Withrow, and L. T. Work. V. F. Kimball was present.

President Flett appeared briefly at the meeting to present several subjects for consideration by the Councilors.

The minutes of the preceding meeting were approved.

The Secretary reported that the membership now stands at 2,385. The following deaths were recorded with deep regret: Frank Moore Beegle, F.A.I.C., on February 22nd; Joseph A. Batscha, F.A.I.C., on March 27th, and Dr. Willard H. Dow, F. A.I.C., on March 31st.

Upon motion, Article XV of the By-laws of the INSTITUTE was amended as follows: " . . . The subscription fee to THE CHEMIST shall be two dollars ($2.00) a year for *Institute members, and three dollars ($3.00) a year for other subscribers.*"

The Secretary presented the report of the tellers who canvassed the nomination ballots for councilorships.

The Secretary presented letters from Dr. L. F. Pierce, councilor from the Los Angeles Chapter, which called attention to restrictive bills concerning toxicology, AB 1986 and SB 961, now before the California legislature. This matter was referred to A. J. Nydick, chairman of the Committee on the Chemist in Public Health. A letter from R. B. Deemer, F.A.I.C., concerning membership cards was referred to the officers of the INSTITUTE with power to act.

A suggestion from Arthur Schroder, F.A.I.C., for a booklet of interest to graduating classes of chemists was discussed.

The Treasurer's report was presented and accepted.

Mr. Neidig reported that the New Jersey Chapter had passed a motion which would arrange to have N.J. members in Burlington County invited to attend meetings of the Pennsylvania Chapter.

Reports that various groups of chemists had been dismissed from chemical firms were discussed. The question was proposed, is there any way in which this or any other group could, if it were alleged that caprice had been used in firing chemists, act effectively? It was asserted that there are certain protective devices in the better companies that make caprice-firing difficult. It was agreed that the INSTITUTE could be of value to the individual chemist by making available to him a knowledge of what good personnel policies are, so that he can evaluate companies when he seeks employment. The Council members agreed to keep in touch with current employment practices and to report at future meetings.

The Secretary was asked to notify the Chapters of their opportunities to award student medals in their areas.

Other matters were referred to the appropriate committees.

The following new members were elected:

LIFE MEMBER

North, Henry Briggs
President, North Metal & Chemical Company, 640 E. Mason Ave., York, Pa.

FELLOWS

Bongiorni, Domenic Frank
Associate, Campbell, Brumbaugh, Free & Graves, 90 Broad Street, New York, N.Y.

Hitchcock, Lauren Blakely
Vice-President, Chemicals Department, The Quaker Oats Company, 1900 Board of Trade Bldg., Chicago 4, Illinois.

Johnson, Ernest W.
Chemist, Metal & Thermit Corporation, Box 255, Rahway, N. J.

Lowenheim, Frederick A.
Research Chemist, Metal & Thermit Corp., Box 255, Rahway, N.J.

Merrill, Edward C.
Assistant Vice President, Rexall Drug Company, 93 Leon St., Boston, Mass.

Moss, Melvin Lane
Assistant Chief, Analytical Division, Aluminum Company of America, Aluminum Research Labs., New Kensington, Pennsylvania.

Myers, Robert James
Research Supervisor, Rohm & Haas Company, 5000 Richmond Street, Philadelphia, Pa.

Nair, John Henry
Assistant Director of Research, Continental Foods, Inc., 1500 Hudson Street, Hoboken, New Jersey.

Puck, Theodore Thomas
Professor and Head, Department of Biophysics, University of Colorado Medical Center, 4200 E. Ninth Ave., Denver 7, Colorado.

Reuter, Raymond
Technical Representative, National Aluminate Corporation, Chicago 38, Ill.

Roark, Ruric Creegan
Principal Chemist in Charge, Division of Insecticide Investigations, U. S. Department of Agriculture, Beltsville, Maryland.

Rosinger, Arthur
Chief Chemist, Director of Research and Development, National Products Refining Company, 902 Garfield Ave., Jersey City, N. J.

Ross, Arthur M. Jr.
President, Ross & Roberts, Inc., 1131 Campbell Ave., West Haven 16, Conn.

Roth, Charles F.
President, International Exposition Company, Grand Central Palace, New York 17, N. Y.

Schildknecht, Calvin E.
Chemist, Development Department, General Aniline & Film Corporation, 247 Park Ave., New York, N. Y.

Sollner, Karl
Chief Physical Biochemist and Professor, Laboratory of Physical Biology, Experimental Biology & Medicine Institute, National Institute of Health, Bethesda 14, Maryland.

Standley, George Prince
Assistant Manager of Rayon Research, Industrial Rayon Corporation, Cleveland 1, Ohio.

Stoner, George Green
Research Chemist, General Aniline & Film Corporation, Lincoln St., Easton, Pa.

Sweet, Donald H.
General Patent Law Practice and Research Consultant, 330 S. Wells St., Chicago 6, Illinois.

Taft, George H.
Technical Director, Deecy Products Co., 120 Potter St., Cambridge, Mass.

Tapley, Mark W.
Director of New Products Department, Sterling Drug, Inc., 170 Varick St., New York 13, N. Y.

Thornton, Marmaduke Knox
Extension Agricultural Chemist, A. & M. College of Texas, College Station, Texas.

Ungnade, Herbert E.
Associate Professor of Chemistry, Highlands University, Las Vegas, New Mexico.

MEMBERS

Weiss, Elizabeth Adam
Owner, Adam Laboratory, 106-12 Jamaica Avenue, Richmond Hill, New York.

Wiech, Raymond Edward
Chief Chemist, A. Gross & Co., 652 Doremus Ave., P. O. Box 818, Newark 1, New Jersey.

ASSOCIATES

Milionis, Jerry Peter
Graduate Assistant, Chemistry Department, Purdue University, West Lafayette, Indiana.

Shansky, Albert
Director (Owner), Stuyvesant Laboratories, 2700 Church Avenue, Brooklyn 26, New York.

RAISED FROM ASSOCIATE TO MEMBER

Formikell, Alec Ernest
Metallurgical Engineer, Metallurgical & Chemical Engineering Department, Oneida, Ltd., Oneida, New York.

REINSTATED TO FELLOWSHIP

Young, George H.
Assistant Director, Mellon Institute of Industrial Research, University of Pittsburgh, Pittsburgh 13, Pennsylvania.

There being no further business, adjournment was taken.

Local Chapter News

C. P. Neidig, F.A.I.C.

Chicago

Chairman, Dr. Johan Bjorksten.
Vice Chairman, Dr. Herman S. Bloch.
Secretary-Treasurer, Mary L. Alexander.
Representative to National Council, Dr. Charles L. Thomas.
Reporter to THE CHEMIST, Madge M. Spiegler.

On April 15th, the Chicago Chapter held the third meeting in their series on Economic Status. "Improve Those Application Blanks," presented by Dr. Otto Eisenschiml, Scientific Oil Compounding Company, was followed by comments from the guest panel of three: J. A. Arvin, Sherwin Williams Company, R. F. Baldaste, Standard Oil Company (Indiana), and H. F. Schwarz, Sherwin Williams Company.

"An Employment Advisory Service" was presented by our second speaker of the evening, Dr. W. I. Harber, of Research and Development Corporation. This was also followed by comments from the guest panel.

More interesting comments were then brought out in a lively discussion involving members of the audience, the guest panel, and the speakers themselves.

New Jersey

Chairman, Dr. D. L. Cottle.
Vice Chairman, Dr. R. W. McLachlan.
Secretary, Harry Burrell.
Treasurer, John B. Rust.
Representative to National Council, Dr. H. W. Mackinney.

The New Jersey Chapter will meet with the Raritan Valley Section of The American Chemical Society, April 20th, at Rutgers University, where Williams Haynes will speak on "The Economics of Research from the Businessman's Viewpoint." Mr. Haynes is the author of *Chemical Economics, Men, Money and Molecules, Chemistry's Contribution, The Chemical Front,* and three volumes of *American Chemical Industry.* The fourth volume is now in preparation.

Annual Report 1948-1949

THE New Jersey Chapter's program for 1948-49 was in charge of Chester Amick. Five meetings were held, two of which were strictly A.I.C. meetings. The other three were joint meetings with the North Jersey Section of the American Chemical Society and its geographical subdivisions.

The first meeting, in October, was

held at the new Esso Research Center in Linden. The program included a tour of the building and talks by Dr. Cecil L. Brown and President Lawrence H. Flett on the "Economic and Professional Status of Chemists."

In May, the chapter was the guest of Merck and Company. A conducted tour of the research, pilot plant, testing, and streptomycin facilities was followed by refreshments served by the company cafeteria, and by the annual business meeting.

Harry Burrell spoke on "Recent Advances in Surface Coatings," before the joint meeting with the Passaic Valley Group of the North Jersey A.C.S. section in Passaic. Dr. Williams Haynes talked on the "Economics of Research from the Businessman's Viewpoint," at the joint meeting with the Raritan Valley Group of the North Jersey A.C.S. section in New Brunswick.

The joint meeting with the North Jersey A.C.S. section in Newark heard a symposium on "Phosphorus Compounds," presided over by Professor L. F. Audrieth of the University of Illinois. The speakers were Dr. J. C. Pernert of the Oldbury Electrochemical Company, Dr. Howard Adler of the Victor Chemical Works, and Dr. John S. Harris of the Monsanto Chemical Company. Dr. M. L. Crossley, twice president of the INSTITUTE, received the INSTITUTE'S award of an honorary membership at this meeting. Dr. August Merz presented Dr. Crossley and President Flett made the award.

Professional orientation talks were given to students of several universities in New Jersey by various Fellows seleced by Dr. A. G. Hill.

William Smyers is in charge of a legislative committee that is combatting a New Jersey Assembly bill designed to place clinical laboratories under the direction of members of the medical profession.

Dr. W. W. Thomas has been in charge of streamlining the organization of the chapter. It is our hope that this work will bear much fruit in the years to come.

As in past years, Harry Burrell served as secretary, inspiration and workhorse for the chapter. It would be difficult to say too much for his ability and energy.

—Dr. D. L. Cottle, *Chairman*

NEW YORK

Chairman, Dr. Martin Meyer.
Vice Chairman, Dr. Lincoln T. Work.
Secretary-Treasurer, Dr. Maurice J. Kelley.
Publicity, G. A. Kirton.
Representative to National Council, Karl M. Herstein.

At the Chapter Council meeting held March 31st, the discussion centered largely about the forthcoming Annual Honors Meeting and Dinner

to be held Wednesday, May 18th, at the Downtown Atheltic Club. Plans for this meeting are taking shape rapidly. The meeting will start with a reception at 6:30 p.m. with cocktails being served. Dinner is scheduled for seven o'clock with the invocation by Rev. Eugene A. Gisel, S.J., chairman of the Department of Chemistry, Fordham University.

Following the annual election of officers for the coming year, Dr. Martin Meyer will make the award of student medals to students from colleges and universities in the Metropolitan area. The presentation of the Honor Scroll to Dr. Donald Babcock Keyes will be a high point of the evening, with addresses by Dr. Milton C. Whitaker, consultant, American Cyanamid Company, and by Lawrence H. Flett, president of THE AMERICAN INSTITUTE OF CHEMISTS.

Reservations for the dinner may be made through Dr. Maurice J. Kelley at Nopco Chemical Company, Harrison, New Jersey.

Among the extra-curricular activities which some of our members have been taking part in recently, we are advised that Dr. Maurice Kelley recently made a talk before the Student Chemical Society at Lehigh University, Bethlehem, Pennsylvania, March 17th, on "The Qualities of the Good Research Man." This talk appears on pages 161-165 of this issue of THE CHEMIST.

Annual Report 1948-1949

DURING 1948-49, the New York Chapter has been very active. There has been a considerable increase in membership to a figure now well over 500.

The Chapter will have held, by the end of the year, five general meetings, including three dinners and two discussion meetings. The opening meeting of the year was a dinner in honor of Dr. Charles L. Parsons who had been elected to Honorary membership in the national INSTITUTE. It was generally agreed that that meeting was one of the most successful of all of the Chapter affairs. The discussion meetings have been characterized by a lively interest and participation on the part of younger members, which has been one of the purposes of the Chapter in conducting them. The final meeting of the year will be held May 18th at the Downtown Athletic Club, and will be the annual Honors Meeting, at which, for the first time, but it is hoped thereby establishing an annual tradition, the Chapter will make an Honor Award. This year's recipient will be Dr. Donald Babcock Keyes of the Heyden Chemical Company.

The Chapter has established and maintained a policy of holding a Council business meeting regularly once a month during the active season. Attendance is required for all officers, councilors, and committee

chairmen. This policy has been successful in securing efficient conduct of the Chapter's business and the initiation of some new and worthwhile activities. One of the new activities which is now well organized and on a going basis is the Membership Advisory Committee, under the chairmanship of Harry Bennett, which offers a wide variety of personal service to members of the Chapter. The Student Relations Committee, headed by Karl M. Herstein, has continued to be very active and useful in establishing and maintaining contacts with all of the local universities, offering aid and guidance to their budding chemical undergraduates. Another new activity is a Committee on Public Relations, chairman, John J. Miskel, which has very extensive plans, including a radio program, which offer promise but have not yet come into fruition. Some of these activities have been and are being described in articles in THE CHEMIST.

The financial affairs of the Chapter are reasonably sound, although the financing of our activities presents the usual problems. We seem to have met rather successfully most of the usual complaints about making friends and orienting members at the meetings, but the fundamental practical problems of arranging the mechanics of a meeting remain as always.

Briefly, it may be said that the New York Chapter is a sound, going, enthusiastic group, as estimated by the Chapter as a whole which has renominated its present officers for another year. We are looking forward to that year as one of achievement.

—Dr. Martin Meyer, *Chairman*

Pennsylvania

Chairman, Dr. Helmuth L. Pfluger.
Vice Chairman, Hillary Robinette, Jr.
Secretary-Treasurer, John H. Staub.
Representative to National Council, Charles W. Rivise.

The Pennsylvania Chapter, A.I.C., and the Philadelphia Section of the American Chemical Society are joint sponsors of the Student Chemist Meeting to be held at the Franklin Institute auditorium on April 28th. Speakers include Dr. Raymond E. Kirk, vice president, A.I.C., and head of the chemistry department of Polytechnic Institute of Brooklyn, who will speak on "Graduate Training and Teaching," and J. W. Reynard, Personnel Department, E. I. Du Pont De Nemours, who will speak on "Industrial Opportunities." It is the intent that these speakers will outline the various futures open to college seniors majoring in chemistry and chemical engineering, so as to aid them in making their selection as to which field of endeavor they will enter following graduation.

Among the invited colleges are: Pennsylvania Military College, Swarthmore College, Haverford Col-

lege, St. Joseph's College, Temple University, Philadelphia College of Pharmacy, Ursinus College, University of Pennsylvania, Drexel Institute of Technology, Philadelphia Textile Institute, Villanova College, West Chester State Teachers College, Bryn Mawr, Philadelphia area colleges, and the Pennsylvania State College Center at Swarthmore.

Washington Chapter Meeting

The Washington Chapter will meet May 24th, at 8:00 p.m. at the National Bureau of Standards, Chemistry Building, Room 214. Miss Elizabeth M. Hewston, F.A.I.C., will speak on "Foods and Vitamins." Messrs. L. N. Markwood and Eduard Farber will report for the Committee on National Legislation Affecting Chemists. Other committee reports will be received and action taken. The election and inauguration of new officers will be held.

John M. McIlvain, F.A.I.C., lectured recently before the New York University Course in Research Management. He presented two papers entitled. "Budgeting in the Research Department" and "Accounting Practices in the Research Department."

Kay Joins Armour Research Foundation

Dr. Otto Kay, F.A.I.C., senior chemist in research and development for the Solvey Process division of the Allied Chemical and Dye Corporation, Syracuse, N.Y., has joined the staff of Armour Research Foundation of Illinois Institute of Technology.

Dr. Kay will be engaged in research and development work in extraction metallurgy in the metals department of the Foundation. He will specialize in titanium. He was associated with Allied Chemical for thirteen years. Previously he was assistant to the superintendent of the U.S. Reduction Company in East Chicago, Indiana. He received the Ph.D. degree, *magna cum laude*, in chemistry and physics from the University of Munich, in 1928.

Seymour Appointed

George L. Wirtz, president of Atlas Mineral Products Company, announces that Dr. Raymond B. Seymour, F.A.I.C., formerly chief chemist for this firm, has returned as executive vice president and general manager. Dr. Seymour was previously associated with the development of several of the corrosion resistant cements, linings, and protective coatings now manufactured by this company.

For Your Library

Manual on Fertilizer Manufacture

By Vincent Sauchelli, F.A.I.C., Director of Agricultural Research, The Davison Chemical Corporation. 1946. 126 *pp.* $4.00.

In preparing this handbook, Dr. Sauchelli had in mind two classes of people connected with the fertilizer industry: first, candidates for training in supervisory positions and, secondly, experienced workers in fertilizer plants who would like to know more about the manufauturing processes in which they are engaged. To the future plant superintendents, the author explains the basic needs of the farmer and gives information about manufacturing good commercial fertilizers that meet those needs; to the not-too-well-trained technician, he describes the chemical reactions and functions of the principal constituents of modern compound fertilizers and does so in language understandable by the layman, yet scientifically accurate.

Not all fertilizers are specifically mentioned, of course, in a book of this size, and many of those listed are not discussed at length, but abundant references are given for the reader who needs more detail or statistical data.

For many experienced operators and executives in the fertilizer field, this manual will offer merely "refresher" material; for those of them whose knowledge of chemistry is somewhat limited, the book will be as interesting as it will be instructive; for newcomers in the industry, Dr. Sauchelli's handbook will undoubtedly be "required reading." For all, the indexes and tables in Part IV will prove of practical assistance.

—Dr. Frederick A. Hessel, F.A.I.C.

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Physical Aspects of Colour

An Introduction to the Scientific Study of Colour Stimuli and Colour Sensations. By P. J. Bouma, Philips Research Laboratories, Eindhoven Netherlands. Elsevier Publishing Company. 312 *pp. Price* $5.50.

An excellent epitome of the vast and ramified subject of color is contained in this book. Essentials of physical and physiological optics are given in elementary form. Standard units and definitions of brightness, luminous intensity, luminous flux and illumination are given in terms of the international luminosity curve (International Committee on Illumination). The international standard light source, a "black body" at the temperature of melting platinum and the use of Planck's formula for temperature radiation are explained with great clarity. The ICI XYZ coordinate system for the specification of color is used and illustrated in numerous examples.

Optical spectrophotometry (visual and photographic) and photoelectric tricolorimetry are briefly discussed. The text closes with a chapter on practical examples in illuminating engineering, in the dye industry, and on additive and subtractive methods of color reproduction. Fourteen tables of numerical data are given in an appendix to aid in the preparation and interpretation of chromaticity diagrams. There is also a bibliography eighteen pages long. The book is of general interest as well as of value to those who have to deal expertly with color matching.

—Dr. E. E. Butterfield, F.A.I.C.

Crystal Structures

By Ralph W. G. Wykoff, Interscience Publishers, Inc., 1948. *Section* 1: 600 *pp.* 6⅝" x 9¼". $8.00 (*including binder for complete work*)

This loose-leaf compilation of crystal structures is a successor to the author's "Structure of Crystals" published earlier in book form. The present volume is being brought up to date and covers the results of all available x-ray determinations of atomic positions in crystals. All x-ray and crystallographic data which do not lead to deduction of atomic positions are not included in this volume. The data are presented in seven chapters each divided into text, tables and illustrations. These cover all the elements so far determined, as well as compounds designated as RX, RX_2, RmXn, $RnMX_2$, $RnMX_3$ and $RnMX_4$. Future installments are planned to cover more complicated inorganic compounds, organo-metallic compounds and other organic compounds, making in all seventeen chapters.

This volume is an invaluable reference work not only for crystallographers but for chemists, physicists, and metallurgists.

—W. C. McCrone

The Chemistry and Technology of Enzymes

By Henry Tauber, F.A.I.C. John Wiley and Sons, Inc. 1949. 550 *pp.* 6" *x* 9¼." *Price*: $7.50; *Canada* $9.00

The author's extensive experience in the specialized field of enzymology has been seasonably incorporated into a single manual, which makes lucid reading of a complex subject already replete with numerous references and patents. The book is divided naturally into two parts: the basic principles and methodology of enzyme chemistry are covered in the first part of the book; these principles are applied to the respective industrial uses in the remaining 281 pages.

There are many points of interest in the first part of the book. The kinetics of biochemical catalysts, the activators and inhibiters of enzymatic activities and the preparation of purified enzymes are amply described, serving as an introduction to the consideration of the individual enzymes and enzyme systems. The proteolytic enzymes are discussed in detail, and whenever possible their industrial applications, methods of preparation, and estimation are given. Several chapters are devoted in detail to the enzymes and enzyme systems involved in the expanding and important field of biological oxidations and reductions.

The second part of the book describes the important applications of enzyme chemistry to industrial processes. The manufacture of baking, brewing, and alcohol-producing yeasts are described along with the chemical composition of yeast and testing methods for fermentative capacities of these organisms. A chapter is given to the production of industrial alcohol and alcohol-by products. Some of the complications involved in the brewing industry are covered in another chapter. The production of citric, gluconic, gallic, and other organic acids by mycological methods are outlined, along with the industrial production of organic compounds such as acetone, butanol, acetic acid, vinegar, and ethanol by bacterial fermentations. A chapter devoted to the production of antibiotics, with particular emphasis on penicillin, streptomycin, and citrinin is indicative of the opportune nature of the book. The applications of enzyme chemistry to the manufacture of bread, malt syrups, dairy products (sour milks and cheese industry), textile and paper industry, broadens the scope of the book to those readers having an

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interest in these fields. The new and important subject devoted to current methods for the bio-assay of vitamins and amino acids constitutes the closing chapter of the book.

This indispensable volume is highly recommended to those interested in enzyme chemistry and its role in everyday life and in industrial processes.

—Matthew A. Bucca, Ph.D.

Distillation and Rectification

By Emil Kirschbaum. Translated by M. Wulfinghoff. Chemical Publishing Company. 430 *pp.* 5¾" *x* 8¾." $10.00.

The subject of distillation has been so thoroughly mistreated in the literature, that this volume which contains reports of original work and research, to the extent of one-third of its content, is most valuable. The data which are presented are in accord with the prevailing methods of academic treatment. The results of the experiments recorded in this volume make it worth possession.

—Dr. John A. Steffens, F.A.I.C.

Chemical Books Abroad

Rudolph Seiden, F.A.I.C.

Among recent publications of the University of London Press, (Warwick Square, London, E.C. 4) are the following three which may prove to be of interest to American teachers and students of chemistry:

(1) *Separation and Identification of Organic Compounds,* by the Chemistry Department of the University of Glasgow; 20 pp. Price 1 s. 6 d. This is a valuable laboratory aid: a scheme for the separation and identification of organic compounds, be they constituents of a mixture or single substances. Of special interest are the group reactions for amines, nitro compounds, alcohols, aldehydes, ketones, acids, anhydrides, esters, etc.

(2) *Fundamental Chemistry,* by Henry Wilkins. Second edition, 544 pp. Price 7s.6d. This richly illustrated book deals in thirty-nine chapters with physical and chemical changes in general; air, water, solutions and crystallization, gases, chemical laws and theories, non-metals, metals and their compounds. The volume distinguishes itself from many other textbooks by including not only a great number of simple experiments and questions (at the end of each chapter), but also up-to-date accounts of manufacturing processes.

(3) *Chemistry (with some Geology) by* J. A. Lauwerys and J. Ellison. 356 pp. Price 6 s 6d. The authors ignore the distinction between inorganic and organic chemistry and stress the contact which chemistry has with industry, everyday life, and especially with geology, but also with biology, physics, and other sciences. This course in chemistry is anything but "dry"; it makes interesting reading and is enlivened by 146 well

selected illustrations. Each of the fourteen chapters of the book contains a number of experiments and review questions.

Reprinted

The article entitled, "The Chemist in the Glass Age," by Dr. Alexander Silverman, F.A.I.C., which appeared in the Silver Anniversary issue of THE CHEMIST, has been reprinted in the *National Glass Budget*, weekly review of the American Glass Industry, issue of September 11, 1948.

Books Announced

"Tables of Bessel Functions of Fractional Order." Volume II. Edited by Arnold N. Lowan, chief, Computation Laboratory of the National Applied Mathematics Laboratories, N.B.S. 365 pp. $10.00, Columbia University Press, New York 27, N. Y.

"1948 Revisions to Official Methods of Analysis." $0.50. Methods of analysis with binder and revisions, $6.00. Order from American Oil Chemists' Society, 35 E. Wacker Drive, Chicago 1, Illinois.

"The Chemical Warfare Service In World War II." Sponsored by the Chemical Corps Association. 1948. 266 pages. $4. Chemical Publishing Company, Inc., 26 Court Street, Brooklyn 2. New York.

"Technique of Organic Chemistry. Vol.II. Catalytic Reactions, by V. I. Komarewsky, F.A.I.C., and C. H. Riesz; Photochemical Reactions, by W. Albert Noyes, Jr., and V. Boekelheide; Electrolytic Reactions, by Sherlock Swann, Jr. 219 pp. $5.00 Interscience Publishers, Inc., 215 Fourth Ave., New York 3, N.Y.

"Elastomers and Plastomers. Their Chemistry, Physics, and Technology." Vol. II of Polymer Series. Edited by R. Houwink. 174 pp. $4.50. Elsevier Publishing Company, Inc., 215 Fourth Avenue, New York 3, N. Y.

"An Introduction to Comparative Biochemistry." By Ernest Baldwin, 164 pp. $1.75. Cambridge University Press, England. The Macmillian Company, 60 Fifth Avenue, New York 11, N. Y.

"Fundamental Processes of Dye Chemistry." By Hans Eduard Fierz-David and Louis Blangey. Translated from the Fifth Austrian Edition by Paul W. Vittum. 479 pp. Price $9.50. Interscience Publishers, Inc., 215 Fourth Avenue, New York 3, N. Y.

"Handbook of Chemistry and Physics." 30th Edition. Edited by Charles D. [illegible] MS 2704 pp. $6.00. Chemical Publishing Company, 26 Court Street, Brooklyn 2, N. Y.

John Wiley & Sons, 440 Fourth Avenue, New York 16, N. Y., announce that a new series of annual volumes on the preparation of biochemical compounds, the "Biochemical Preparations Series," is being issued. Volume I, edited by Herbert E. Carter, was published February 15th. Dr. H. T. Clarke, F.A.I.C., Department of Biochemistry of the College of Physicians and Surgeons, is a member of the advisory board for the series.

"Colloid Chemistry." Second Edition. By Harry Boyer Weiser. 1949. 444 pp. $5.50. John Wiley & Son, Inc., 440 Fourth Avenue, New York 16, N. Y.

"Techniques of Histo—and Cytochemistry," by David Glick, Ph.D. 1949. 555 pp. $8.00. Interscience Publishers, 215 Fourth Ave., New York 3, N. Y.

"Elsevier's Encyclopaedia of Organic Chemistry." Vol. 12 B, part 1. Edited by F. Radt. Naphthalene. 344 pp. plus subject and formula indexes. Subscription price $24.00. Series price $28.00. Single price $32.00. Elsevier Publishing Company, Inc., 215 Fourth Avenue, New York 3, N. Y.

"Drug Plants of Africa." By Thomas S. Githens, M.D. 125 pp. $2.25. University of Pennsylvania Press, 3436 Walnut Street, Philadelphia 4, Pa.

"International Who's Who," 13th, 1949, edition. 1000 pp. £4 Os. Od. (U.S.A. $16). Europa Publications Ltd., 39 Bedford Square, London, W.C.1, England.

"Chemical and Electro-Plated Finishes." By H. Silman. 414 pp. $10.00. The Sherwood Press, P. O. Box 566, Pacoima, California.

"Contribution a L'Etude de la Structure Moleculaire." Volume commemorating Victor Henri. Preface by L. Brillouin and J. Duchesne. Contributors are 26 international specialists. 314 pp. Price 325 francs. Editions Desoer, 21, rue Sainte-Veronique, Liege, Belgium.

"Rheinisch - Westfaelisches Wirtschafts-u. Firmenjahrbuch." Economic directory of the Ruhr District. 1000pp. $18.00. Request information from E. Schuette, general agent of Verlag Glueckauf G.m.b.H., Kettwig (Ruhr), Hauptstr. 43, Germany.

"The Way to Write," by Rudolf Flesch and A. H. Lass. Revised Edition, 342 pp. $3.50. Harper & Brothers, 51 East 33rd Street, New York 16, N. Y.

"Kinetics of Chemical Change in Solution," by Edward S. Amis, 1949. The Macmillian Company, 60 Fifth Avenue, New York, N.Y. 332 pp. $5.00

Booklets

"High Vacuum Apparatus," 48-page pamphlet including listing of Cenco mechanical pumps, D-P diffusion pumps and other vacuum accessories. Request it from Central Scientific Company, Department G, 1700 Irving Park Road, Chicago 13, Illinois.

"Solubility of Dyes for the Paper Trade." Calco Technical Bulletin No. 805. Request it from the Advertising Manager, American Cyanamid Company, Calco Chemical Division, Bound Brook, N. J.

"New Laboratory Day - Night Clock Switch." Information sheet. Fisher Scientific Co., 717 Forbes Street, Pittsburgh 19, Pa.

Foster D. Snell, Inc., 29 West 15th Street, New York, N.Y., announces the expansion of its Market Research Department to cover four forms of service: 1. Market Research, 2. The Market Brief, 3. Chemical Index, and 4. Monthly Chemical Report. Further information is available on request.

"Philosophical Library Science Publications. Spring, 1949." Catalog. Philosophical Library, Publishers, 15 East 40th Street, New York 16, New York.

"Commercial Chemical Development," leaflet available from R. S. Aries & Associates, 26 Court Street, Brooklyn 2, N. Y.

"Scientific Apparatus and Methods, including latest catalog revisions." Winter 1948-1949. Available from E. H Sargent and Company, 155-165 East Superior Street, Chicago 11, Illinois

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"Translations of German and Russian . . . Dealing with Metals and Metallurgy. Research Bulletin No. 33." Catalog. Research Information Service, 509 Fifth Avenue, New York 17, N. Y.

"Optical Glass at the National Bureau of Standards. N.B.S. Circular 469." Available from Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C. 15 cents a copy.

"New Electric Immersion Heat Units to Resist Sulphuric Acid Solutions and other Corrosive Agents." Descriptive literature available from Electro-Therm, Inc., 8024 Georgia Avenue, Silver Spring, Maryland.

"Now Sonic Energy at High Intensities." Folder available from Ultrasonic Corporation, Cambridge, Massachusetts.

"Atomic Energy Development. 1947-1948." U. S. Atomic Energy Commission Report. 213 pp. Price 45 cents. Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

"Miscellaneous Publication M191, Charts of Compressibility Factors and Charts Showing Quantities Delivered by Commercial Cylinders for Hydrogen, Nitrogen, and Oxygen." Price 25 cents. Obtainable from Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

"MC-EX, Explosion-proof Floor Machine." New floor machine for use in hazardous areas. Request information from Multi-Clean Products, Inc., 2277 Ford Parkway, St. Paul 1, Minn.

'New and Improved Radium Beryllium Neutron Sources." Information may be obtained from United States Radium Corporation, 535 Pearl Street, New York 7, N. Y.

"Naturwissenschaften, Mathematik, Ingenieurwissenschaften, Technik." Catalog available from Verlag Birkhauser, Basel 10, Switzerland.

"Atomic Energy Newsletter." Biweekly, 4-page reports. Subscription $18.00. 509 Fifth Avenue, New York 17, N.Y.

"Bulletin No. 111A, 6-Methylthiouracil." Includes references to studies on various anti-thyroid drugs. Request it from Schwarz Laboratories, Inc., 202 East 44th Street, New York, N.Y.

"Catalogue No. 134. Part I: Rare Books. Part II: Important Works on Science and Medicine. Part III: Clearance Section of Interesting Books at Reduced Prices." Price 2d. Davis & Orioli, 56 Maddox Street, London, W.1, England.

"Hercules Cellulose Gum," 16-page booklet. Available from Hercules Powder Company, Wilmington, Delaware.

"Market Research Sources." The Office of Domestic Commerce announces that a 1949 edition is now in course of preparation. Inquiries should be addressed to the Marketing Division, Department of Commerce, Washington, D. C.

"*Bookforecast*," monthly publication surveying world book production. Annual subscription, United States $8.00. Bibliographia Internationalis Brill, Leiden, Holland.

"*Versene* Fe-3, New Sequestering Agent." Information may be obtained from The Bersworth Chemical Company, Framingham, Massachusetts.

"Precision—Shell Sample Pulverizer." Information may be obtained from Precision Scientific Company, 3737 W. Cortland Street, Chicago 47, Illinois.

"*Polyco* 350. Data Sheet P-11." Available from American Polymer Corporation, Peabody, Mass.

"The New Testa Model F Microscope." Descriptive sheet. Testa Manufacturing Company, 418 South Pecan Street, Los Angeles 33, California.

"Little Known Ways to Save Big Money with Fine Wire. Bulletin 11." Covers separation in mist extraction, gas filtering, tower packing, cleaning and baffling with York elements. Request it from Otto H. York Company, Inc., 364 Glenwood Ave., East Orange, N. J.

"A New Product, Farrand Thermocouple — Hornig-O'Keefe Type." Information Sheet. Farrand Optical Company, Inc., 4401 Bronx Boulevard, New York 66, N. Y.

"The Nolan Fat Extractor." Sheet describing new multiple extractor which makes 18 to 54 fat determinations at one time. Request it from Macalaster Bicknell Company of Connecticut, Inc., 181 Henry Street, New Haven, Conn.—Cambridge, Mass.—Syracuse, New York.

"A National Oil Policy for the United States," 28-page report of The National Petroleum Council, 601 Commonwealth Building, 1625 K Street, N.W., Washington 6, D. C. Single copies, 25 cents each. Quantity discounts are offered.

"The Public's Stake in Patents" By Howard E. Blood. National Association of Manufacturers, 14 West 49th Street, New York 20, New York.

"New Stainless Steel Pail Now Available." Descriptive sheet. Available from E. E. Bagnall, Stainless Steel Container Co., Dept. 50, Board of Trade Bldg., Chicago 4, Illinois.

"Catalog 'M' of Laboratory 'Operating' Supplies." 400 pp. Available to Laboratory purchasing agents. Palo-Myers, Inc., 81 Reade Street, New York 7, N. Y.

"New Catalog. Scientific Laboratory Glassware and kindred items." 188 pp. Illustrated. Available from Daylite Vacuum Products Company, 5207 N. Milwaukee Ave., Chicago 30, Illinois.

"New film-forming resin *Duraplex-DX*-656." Information may be obtained from Resinous Products Division of Rohm & Haas Company, Washington Square, Philadelphia, Pennsylvania.

Condensates

Ed. F. Degering, F.A.I.C.

From the time of the Peasants' Rebellion on, all true democratic movements have been branded as anti-religious. In part this has been an effort to discredit them, and in part it has been a perception that democracy is essentially anti-authoritarian—that it not only demands the right but imposes the responsibility of thinking for ourselves. And belief is the antithesis to thinking. A refusal to come to an unjustified conclusion is an element of an honest man's religion. To him the call to blind faith is really a call to barbarism and slavery. In being asked to believe without evidence, he is being asked to abdicate his integrity. Freedom of speech and freedom of action are meaningless without freedom to think. And there is no freedom of thought without doubt. The civilized man has a moral obligation to be skeptical, to demand the credentials of all statements that claim to be facts. An honorable man will not be bullied by a hypothesis. For in the last analysis, all tyranny rests on fraud, on getting someone to accept false assumptions, and any man who for one moment abandons or suspends the questioning spirit has for that moment betrayed humanity.

—Bergen Evans.

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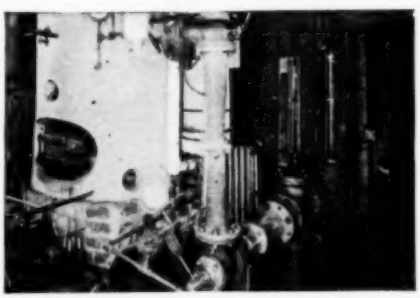

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—Dr. Andrew C. Ivey, Vice President, University of Illinois.

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